OVERVIEW OF THE GENUS *BAPTISIA* (LEGUMINOSAE)

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ABSTRACT

Preparation of a treatment of *Baptisia* for the Flora of North America (FNA) has occasioned the present study. Seventeen species are recognized, three of these each having two allopatric intergrading varieties: *B. australis* (varieties *australis* and *minor*); *B. lactea* (varieties *lactea* and *pendula*); and *B. lanceolata* (varieties *lanceolata* and *elliptica*). Maps showing the distribution of all taxa by state and county are provided, largely because the FNA format shows the distribution of taxa by state only (a single dot centered in the center of a state's outline). My overview follows closely the treatments accorded the genus by Isely (1981, 1998), except that I have arranged these by clades, as suggested by the study of Mendenhall (1994). Additionally, I have had to erect two new names for the complex, as follows: **B. lactea** var. **pendula** (Larisey) B.L. Turner, **comb. nov.** (= *B. lactea* var. *obovata* [Larisey] Isely); and **B. lanceolata** var. **elliptica** (Small) B.L. Turner, **comb. nov.** (= *B. lanceolata* var. *tomentosa* (Larisey) Isely).

KEY WORDS: *Baptisia*, Leguminosae, Fabaceae

Isely (1981) provided a rather detailed , excellent account of *Baptisia* in which 15 species were recognized, some of these with several infraspecific taxa. This treatment was modified (but not improved upon) in is his account of the Leguminosae for the United States (Isely 1998). In my treatment of *Baptisia* for FNA I have added additional taxonomic frills, including revised keys and geographical enhancements, these based upon distribution at the county level, as shown here in. Data for the latter were obtained from various sources, mainly that of Larisey (1941), Isely (1981, 1998), and various floras of the region concerned.

In the account that follows, I have arranged the taxa by phyletic groupings according to the cladistic analyses of Mendenhall (1994) in which a large assemblage of data, including that of DNA, was brought to bear on the subject. In particular, I largely relied upon her Fig. 21 ("A single most parsimonious tree generated using combined character sets."), this agreeing well with my particular intuitive assessments of relationships within the genus. In my forth coming treatment for FNA, a more detailed treatment of the taxa is provided, including a key to the taxa concerned; in this I recognize the following taxa:

B. ALBA -B. TINCTORIA CLADE:

1. Baptisia alba (L.) Ventanat Fig. 1

The genus is typified by this species. The name itself is lectotypified by an illustration cited by Linnaeus (Martyn, Hist. Pl. Rar. 44, t. 44. 1728). Reveal (per. comm.) sent me a xerox (TEX) of a Carolina plant grown from seed in 1729 and sent by Mark Catesby to Europe (BM) which closely matches the illustration of the lectotype. While the illustration of the fruit on the lectotype is ambiguous, the pod seemingly standing somewhere between *B. lactea* and B. *alba*, the flowers and leaves of the Catesby collection appear to match those of the illustration concerned. After viewing this I have little hesitation in attaching the lectotype to *B. alba*. Isley (1981) also accepted *B. alba* in this sense, but subsequently Isely (1998) applied the latter name to what I call *B. lactea*, taking up the name *B. albescens* for what he had earlier referred to as *B. alba*. In my opinion, *B. albescens* is a synonym of the much earlier *B. alba*. The latter species occurs throughout most of South Carolina; *B. lactea*, however, is relatively rare and confined to the more western parts of South Carolina, and seeds from this taxon are unlikely to have been collected by the early collectors in the state.

2. Baptisia lactea (Rafinesque) Theiret Figs 2, 3

My circumscription of this taxon is about the same as that of Isely (1981), except that I apply the varietal name *pendula* to what

he calls var. *obovata*, this necessitated under the current Code of Botanical Nomenclature (Art 11.6), as noted below.
Baptisia lactea var. **pendula** (Larsey) B.L. Turner, comb. nov.
Based upon *Baptisia pendula* Larisey, Ann. Missouri Bot. Gard. 27: 170. 1940.
When Baptisia *pendula* var. *obovata* Larisey was first described, the varietal name *pendula* was also created, this then being the correct name for the infraspecific category concerned.

3. Baptisia sphaerocarpa Nuttall Fig. 4

My treatment of this yellow-flowered species follows that of Isely (1981,1998).

4. Baptisia australis (Linnaeus) R. Brown Fig. 5

Isely (1981, 1998) treated this widespread, blue-flowered, species as having two intergrading varieties as shown in Fig. 5. I also accept this interpretation. Mendenhall (1994), however, recognized var. *minor* at the specific level, including within it two varietal taxa, a widespread var. *minor*, and a more localized var. *aberrans* (from cedar glade habitats of Tennessee). I consider the latter taxon to belong to the typical var. *australis*, although Mendenhall accepted its varietal status.

5. Baptisia megacarpa Torrey & A. Gray Fig. 6

This relatively localized, yellow-flowered, endemic was positioned by Mendenhall (1994) within the present clade. Isely (1981,1998) also thought its relationships to be with the *B. alba* – *B. lactea* complex.

6. Baptisia tinctoria (Linnaeus) Ventenat Fig. 7

My interpretation of this widespread, yellow-flowered, species

follows that of Isely (1981, 1998).

SIMPLE - LEAFED CLADE

7. Baptisia arachnifera Duncan Fig. 8

This relatively recently described, yellow-flowered, species is known only from Brantley and Wayne counties, Georgia.

8. Baptisia simplicifolia Croom Fig. 9

This localized yellow-flowered species is endemic to the more eastern parts of the Panhandle Region of Florida.

9. Baptisia perfoliata (Linnaeus) R. Brown Fig. 10

This is a very distinctive, yellow-flowered species, not easily confused with another.

B. NUTTALLIANA– B. LANCEOLATA CLADE

10. Baptisia nuttalliana Small Fig. 11

My treatment of this yellow-flowered species follows that of Isely (1981, 199).

11. Baptisia lanceolata (Walter) Elliott Fig. 12, 13

My treatment of this yellow-flowered species mirrors that of Isely (1981, 1994) in which two intergrading varieties are recognized: the typical var. *lanceolata*, and **B. lanceolata** var. **elliptica** (Small) B.L. Turner, **comb. nov.**
Based upon *B. elliptica* Small, Fl. Southeast. U.S., ed. 1, 599, 1331. 1903.

Isely (1981, 1998) used the synonymous *B. lanceolata* var. *tomentosa* (Larisey) Isely in place of the var. *elliptica*, this contrary

to Art.11.6. of the current Code (cf. above discussion of *B. lactea*).

B. LEUCOPHAEA – B. BRACTEATA CLADE

12. Baptisia leucophaea Nuttall Fig. 14

Isely (1981, 1998) included this yellow-flowered taxon within his concept of B. *bracteata* (as *B. b.* var. *laevicaulis*, although the correct name at that rank should be var. *leucophaea*). He also recognized a var. *glabrescens* under the fabric of his *B. bracteata.* I recognize both *B. bracteata* and *B. leucophaea* as good species, the latter conceived as widespread and highly variable, lacking well-defined infraspecific taxa. *Baptisia bracteata* is confined to the southeastern U.S. and does not appear to intergrade with *B. leucophaea.* However, the two are clearly closely related, both possessing bracteate, secund, reflexed racemes.

13. Baptisia bracteata Elliott Fig. 15

This yellow-flowered species is confined to the southeastern U.S. Isely (1981, 1998) included *B. leucophaea* within its parameters, as noted in the above.

14. B. cinerea (Rafineque) Fernald & Schubert Fig. 16

My concept of this yellow-flowered category follows that of Isely (1981,1998).

B. CALYCOSA – B. HIRSUTA CLADE

15. B. calycosa Canby Fig. 8

This highly localized species is endemic to northeastern Florida. Isely (1981, 1998) included within its fabric (as a variety) *B. villosa* Canby, but I treat the latter as a good species, *B. hirsuta*, this the correct name when treated at the specific level.

16. B. hirsuta Small Fig. 17

A noted in the above, Isely (1981,1998) treated this taxon within his concept of *B. calycosa*.

17. B. lecontei Torrey & A. Gray Fig. 18

Baptisia lecontei clearly belongs to the yellow-flowered *B. calycosa* clade, as well noted by Mendenhall (1994).

LITERATURE CITED

Isely, D. 1981. *Baptisia*, in Leguminosae of the United States 111. Memoirs New York Bot. Gard. 25: 49-89.

Isely, D. 1998. *Baptisia*, in Native and Naturalized Leguminosae (Fabaceae) of the United States. pp. 454-464. Brigham Young Univ., Provo, Utah

Larisey, M.M. 1940. Monograph of the genus *Baptisia*. Ann. Missouri Bot. Gard. 27: 119-244.

Mendenhall, M.G. 1994. Phylogeny of *Baptisia* and *Thermopsis* (Leguminosae) as inferred from chloroplast DNA and nuclear ribosomal DNA sequences, seconday chemistry, and morphology. Doctoral Dissertation, University of Texas, Austin

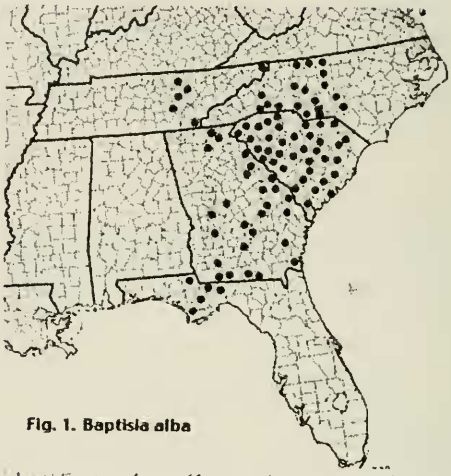

Fig. 1. Baptisia alba

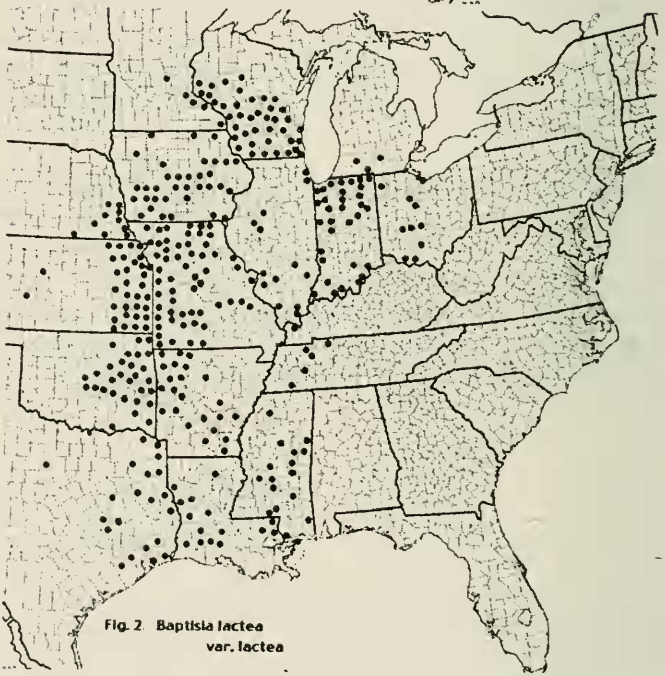

Fig. 2 Baptisia lactea
var. lactea

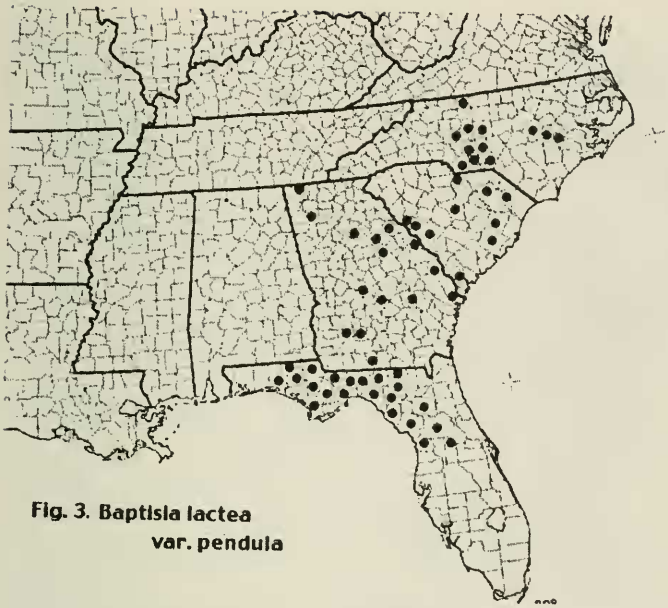

Fig. 3. Baptisia lactea var. pendula

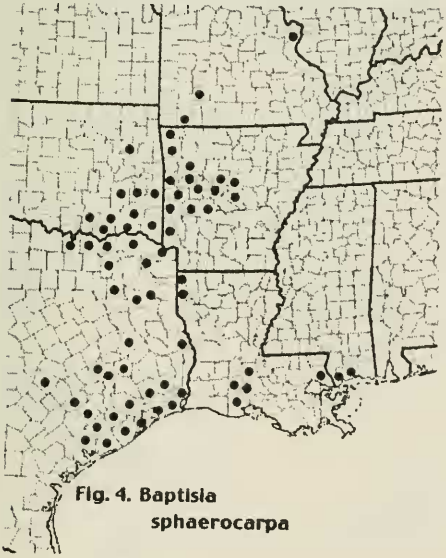

Fig. 4. Baptisia sphaerocarpa

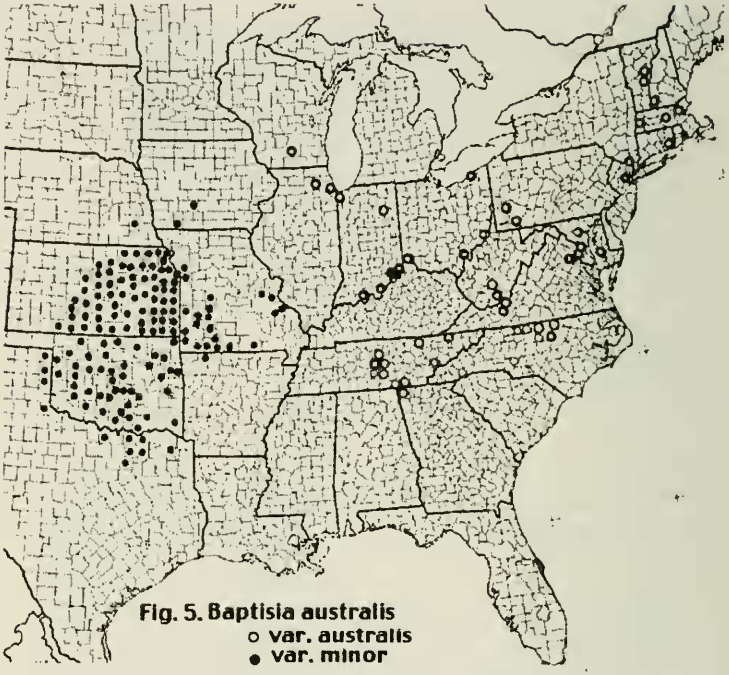

Fig. 5. Baptisia australis
○ var. australis
● var. minor

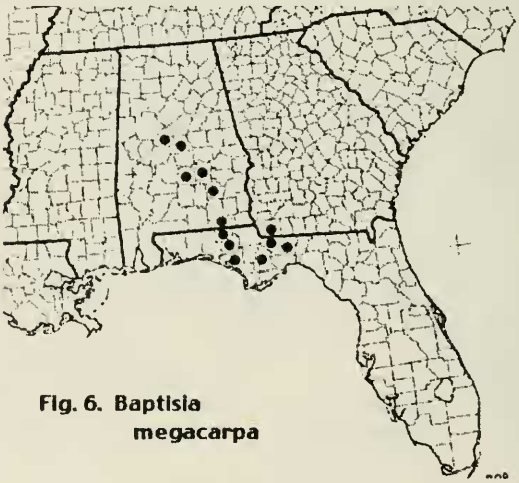

Fig. 6. Baptisia megacarpa

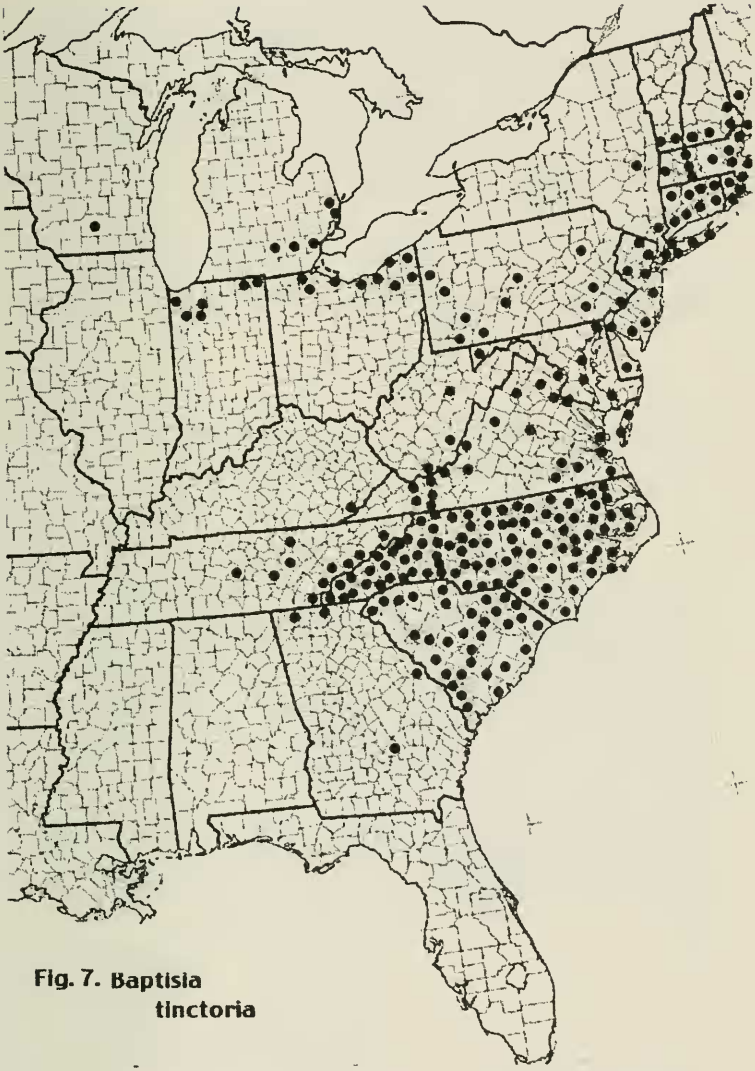

Fig. 7. Baptisia tinctoria

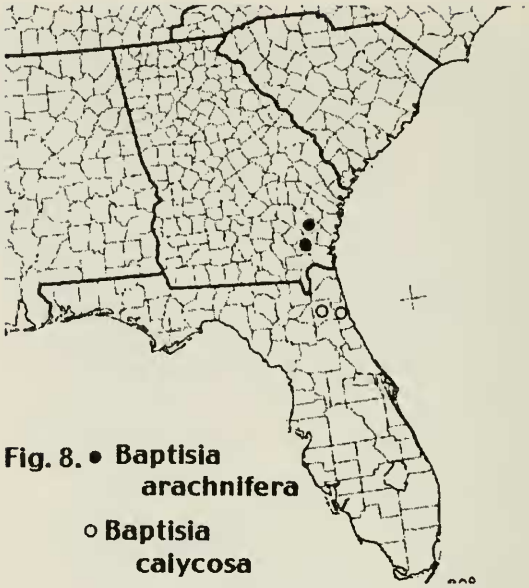

Fig. 8. • Baptisia arachnifera
o Baptisia calycosa

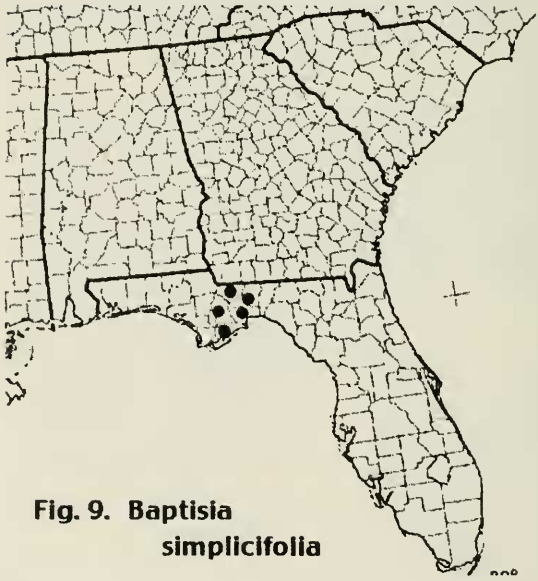

Fig. 9. Baptisia simplicifolia

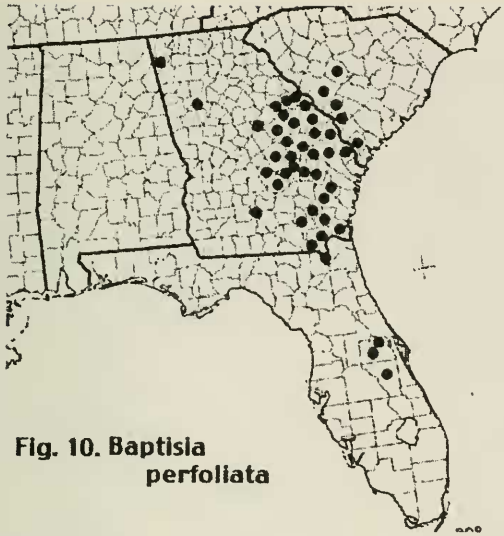

Fig. 10. Baptisia perfoliata

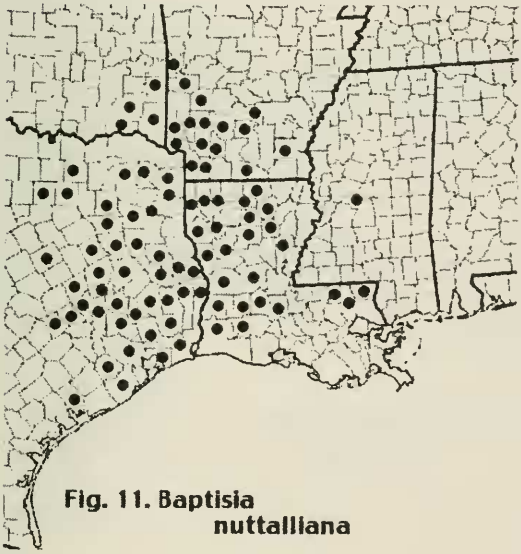

Fig. 11. Baptisia nuttalliana

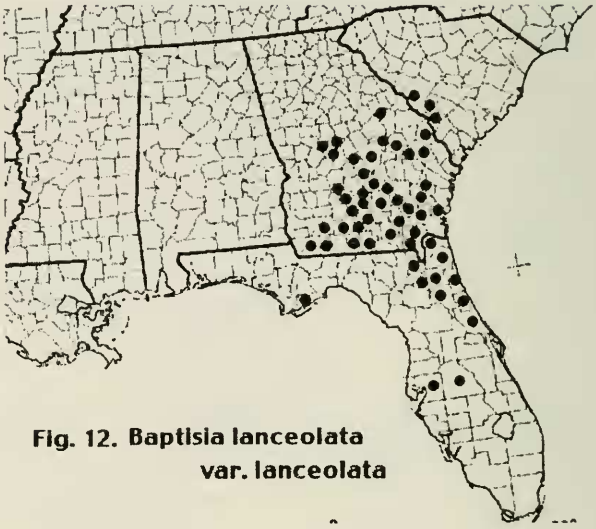

Fig. 12. Baptisia lanceolata var. lanceolata

Fig. 13. Baptisia lanceolata var. elliptica

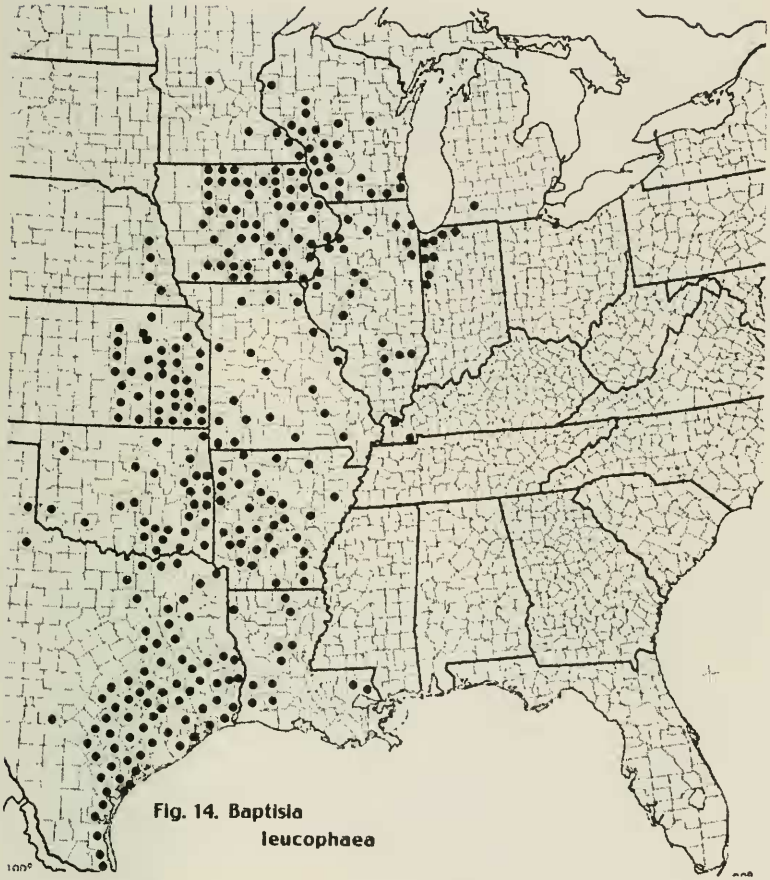

Fig. 14. Baptisia leucophaea

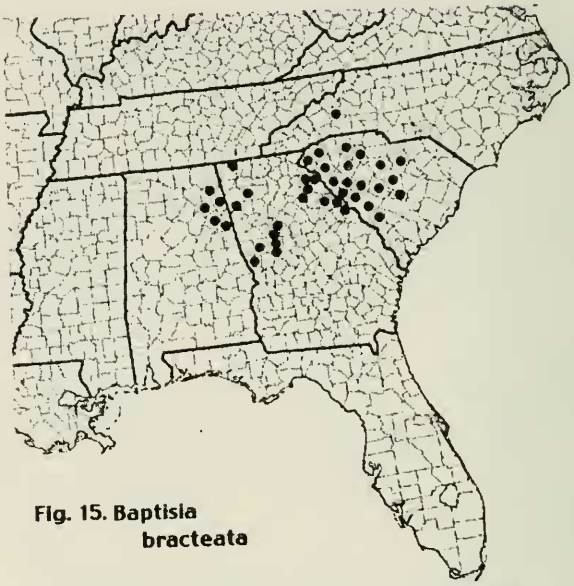

Fig. 15. Baptisia bracteata

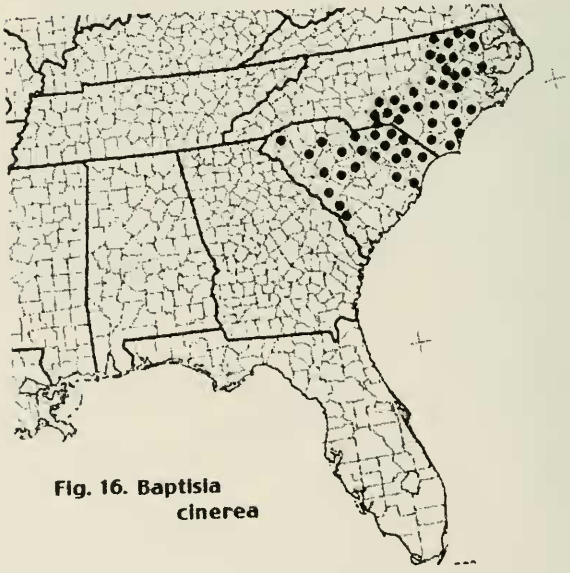

Fig. 16. Baptisia cinerea

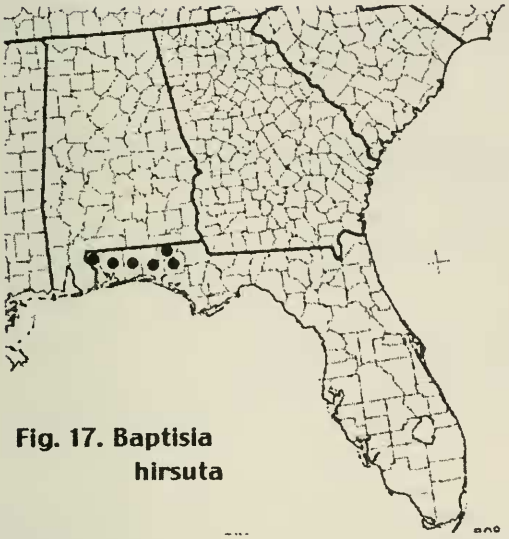

Fig. 17. Baptisia hirsuta

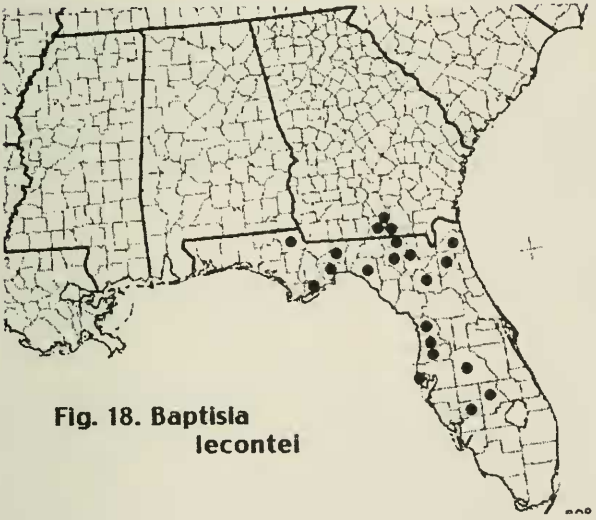

Fig. 18. Baptisia lecontei